

Application No. 09/868,953  
Amendment dated October 8, 2003  
Reply to Office Action dated April 22, 2003

### IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### Listing of claims:

1. (currently amended): A bone resorption inhibitor composition comprising leukocyte activating protein factor or leukocyte activating protein factor-derived substances having an amino acid sequence of SEQ ID NO. 2, that is produced utilizing gene technology in an amount effective for bone resorption inhibitory activity.

2. (currently amended): ~~The~~ A bone resorption inhibitor composition comprising leukocyte activating protein factor or leukocyte activating protein factor-derived substances, ~~according to claim 1,~~ wherein the leukocyte activating protein factor has sequences of amino acid number 19 to 151 of SEQ ID NO. 2.

3. (previously presented): The bone resorption inhibitor composition according to claim 1, wherein the leukocyte activating protein factor or leukocyte activating protein factor-derived substances inhibits against osteoclast cell activity.

4. (previously presented): The bone resorption inhibitor composition according to claim 1, wherein said substances have an inhibitory activity of more than 80% at a concentration of 10 µg/ml using percent inhibition of pit formation.

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5. (previously presented): A screening method for bone resorption inhibitor derived substances containing leukocyte activating protein factor or leukocyte activating protein factor-derived substances having an amino acid sequence of SEQ ID NO. 1, which are purified from the source of these substances, or which are prepared by or synthesized based on the information of these substances, comprising providing said derived substances and determining bone resorption inhibitory activity of the derived substances using percent inhibition of pit formation.

6. (previously presented): A method of producing bone resorption inhibitor comprising using leukocyte activating protein factor or leukocyte activating protein factor-derived substances having an amino acid sequence of SEQ ID NO. 1 in the production of bone resorption inhibitors.

7. (currently amended): A method for bone resorption inhibiting in an animal comprising administering to said animal an effective amount of bone resorption inhibitor derived substances containing leukocyte activating protein factor or leukocyte activating protein factor-derived substances having an amino acid sequence of SEQ ID No. NO. 1.

8. (previously presented): The bone resorption inhibitor composition according to claim 2, wherein the leukocyte activating protein factor or leukocyte activating protein factor-derived substances inhibits against osteoclast cell activity.

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9. (previously presented): The bone resorption inhibitor composition according to claim 2, wherein said substances have an inhibitory activity of more than 80% at a concentration of 10  $\mu\text{g/ml}$  using percent inhibition of pit formation.

10. (previously presented): The bone resorption inhibitor composition according to claim 3, wherein said substances have an inhibitory activity of more than 80% at a concentration of 10  $\mu\text{g/ml}$  using percent inhibition of pit formation.

11. (previously presented): The method of claim 5, wherein the sample is obtained from an animal.

12. (previously presented): The method of claim 11, wherein the animal is a human.

13. (previously presented): The method of claim 7, wherein the animal is a human.

14. (previously presented): A method of producing bone resorption inhibitor comprising:  
providing leukocyte activating protein factor or leukocyte activating protein factor-derived substances; and

using the leukocyte activating protein factor or the leukocyte activating protein factor-derived substances in the production of bone resorption inhibitors,

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wherein the leukocyte activating protein factor or leukocyte activating protein factor-derived substance has an amino acid sequence of SEQ ID NO. 1.

15. (previously presented): A method for bone resorption inhibiting in an animal comprising:

providing a bone resorption inhibitor derived substance containing at least one leukocyte activating protein factor or leukocyte activating protein factor-derived substance; and

administering to said animal an effective amount of a bone resorption inhibitor derived substance containing leukocyte activating protein factor or leukocyte activating protein factor-derived substances,

wherein the bone resorption inhibitor derived substances containing leukocyte activating protein factor or leukocyte activating protein factor-derived substances has an amino acid sequence of SEQ ID NO. 1.

16. (new): The bone resorption inhibitor composition according to claim 1, wherein the composition is produced utilizing pMAL-TM-C or pGEX-3X, or both, as a vector.

17. (new): The bone resorption inhibitor composition according to claim 1, wherein the composition is produced utilizing *E. coli* or yeast cells, or both, as host cells.

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18. (new): The bone resorption inhibitor composition according to claim 1, wherein the composition is present in an aqueous solution.

19. (new): The bone resorption inhibitor composition according to claim 1, wherein said bone resorption inhibitor composition further comprises a carrier.

20. (new): The bone resorption inhibitor composition according to claim 1, wherein the composition is in contact with unfractionated bone tissue cells.